

## Unit Planning Guide: Geometry Unit 4 of 8

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| <b>Unit Title:</b> Similarity | <b>Pacing (Duration of Unit):</b> 20 days |
| <b>Grade:</b> Geometry        | <b>Buffer Day(s):</b> 5 days              |

### Desired Results

#### Transfer Goals (Priority practice standards in **bold**)

*Students will be able to independently use their learning to:*

- MP.1. **Make sense of problems and persevere in solving them.**
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. **Model with mathematics.**
- MP.5. Use appropriate tools strategically.
- MP.6. **Attend to precision.**
- MP.7. **Look for and make use of structure.**
- MP.8. Look for and express regularity in repeated reasoning.

#### Established Goals (2011 MA Curriculum Frameworks Standards Incorporating the Common Core State Standards)

#### Prerequisite Standards:

- **7.G.1-** Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
- **8.G.4-** Understand that a two dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two dimensional figures, describe a sequence that exhibits the similarity between them.

**WIDA for English Language Learners**  
 Standard 1: ELLs **communicate** for **Social** and **Instructional** purposes within the school setting  
 Standard 3: ELLs **communicate** information, ideas and concepts necessary for academic success in the content area of **Mathematics**  
 In the lesson planning stage, teachers will

## Unit Planning Guide: Geometry Unit 4 of 8

### Standards (Priority Standards in **bold**):

- **G-SRT.1. Verify experimentally the properties of dilations given by a center and a scale factor:**
  - **G-SRT.1a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.**
  - **G-SRT.1b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.**
- **G-SRT.2 Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.**
- **G-SRT.3 Use the properties of similarity transformations to establish the Angle-Angle (AA) criterion for two triangles to be similar.**
- G-SRT. 4 Prove theorems about triangles. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*
- G-SRT. 5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
- G-GPE.6 Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

need to differentiate lessons for ELLs. In order to accomplish this they will need: 1.) this curriculum map, 2.) a list of their ELLs and their proficiency levels, and 3.) appropriate language function expectations and scaffolds or supports.

**Meaning (\*Mostly assessed through Performance Tasks/Assessments)**

## Unit Planning Guide: Geometry Unit 4 of 8

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| <p><b>Big Ideas:</b> (Statements and concepts written in teacher friendly language which reflect the important [but not obvious] generalizations we want students to be able to arrive at. These are used by the teacher to focus daily instruction.)</p> <ul style="list-style-type: none"> <li>• Dilation preserves angle measure and proportionality of sides.</li> <li>• Dilation is a similarity transformation.</li> </ul> | <p><b>Essential Questions:</b> (Questions which frame ongoing and important inquiries about the big ideas. They are written for students and used in daily instruction to help engage students in meaningful thinking.)</p> <ul style="list-style-type: none"> <li>• In what ways do digital media (cameras, computers, phones, etc) employ similarity properties?</li> </ul> |
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| Acquisition (*Mostly assessed through traditional summative assessments)   |  |
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| <p><b>Knowledge:</b> Key basic concepts, facts, and key terms (written in phrases) students should be able to recall independently.</p> <p><i>Students will know ...</i></p> <ul style="list-style-type: none"> <li>• definitions of <b>dilation</b> and <b>scale factor</b>.</li> <li>• the properties of dilations in reference to parallel lines.</li> <li>• that theorems and postulates can be used to prove similarity <ul style="list-style-type: none"> <li>○ Angle-Angle <b>similarity</b> postulate.</li> <li>○ theorems- Side-Side-Side; Side-Angle-Side</li> </ul> </li> <li>• that the ratio of the <b>perimeters</b> of similar polygons are equal to the ratio of their side lengths.</li> <li>• that the ratio of the <b>areas</b> of similar figures are equal to the ratio of the squares of the side lengths.</li> </ul> <p><b>Bold words are key academic vocabulary</b></p> | <p><b>Skills:</b> The discrete skills and process students should be able to use independently.</p> <p><i>Students will be skilled at:</i></p> <ul style="list-style-type: none"> <li>• calculating ratio/scale factor. (<i>Application</i>)</li> <li>• applying scale factor to dilate a figure. (<i>Application</i>)</li> <li>• writing similarity statements. (<i>Comprehension</i>)</li> <li>• determining side lengths and angle measures using similarity. (<i>Application</i>)</li> <li>• justifying why the dilation of a figure is similar. (<i>Evaluation</i>)</li> <li>• using congruence and similarity to solve problems. (<i>Application</i>)</li> </ul> |

**Resource Suggestions:**

## Unit Planning Guide: Geometry Unit 4 of 8

McDougal Littell  
Geometry 2007

Chapter 6: Similarity

6.1  
6.2  
6.3  
6.4  
6.5  
6.6  
6.7

Chapter 9: Properties of Transformations

9.7

## Unit Planning Guide: Geometry Unit 4 of 8

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